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MARGARET SHAW CAMPBELL

HER CAPABLE HANDS SPUN THE YARN AND WOVE THE CLOTH: THOUGH PRODUCED ON SOUTH UIST, THIS ROLL OF HARRIS TWEED TAKES ITS NAME FROM ANOTHER OUTER HEBRIDES ISLAND (p. 11)

Victoria Falls, Kruger Park Thrill Royalty

TWO of the sight-seeing high lights of the just-concluded South Africa tour of Britain's royal family were roaring Victoria Falls, on the Zambezi River between Northern and Southern Rhodesia, and wild Kruger National Park, in Transvaal Province of the Union of South Africa.

To appreciate the magnitude of Victoria Falls compare it with the more familiar Niagara Falls. The African cataract is considerably wider than Niagara and more than twice as high. Moreover, at the time of the royal visit, which occurred during the rainy season, Victoria was greater in volume than Niagara.

Victoria's Average Volume Is Half That of Niagara

Victoria's straight crest includes 4,500 feet of waterfalls averaging 347 feet in sheer drop. Niagara spills over about 4,000 feet of cliff. Its falls are divided—1,000 feet on the United States side drop 167 feet, and 2,950 feet of Canadian falls drop 158 feet.

Niagara's year-round average flow of 95,000,000 gallons per minute is double the average volume at Victoria Falls. Volume gives power and majesty to Niagara to offset Victoria's height and width advantages, according to travelers who have seen both.

But the Zambezi, varying greatly according to season, regularly swells with March and April rains to a flood-season volume of 120,000,000 or more gallons per minute at Victoria Falls. Then crashing waters cast so much mist and spray that it is difficult to see the actual falls. During the October dry period, Victoria flows only about one-twentieth of its wet-season maximum.

Victoria Falls lies in a little-developed region of wild natural beauty. A single resort hotel, a railroad (illustration, page 2), and a highway are virtually all that mark man's intrusion.

David Livingstone discovered the falls in 1855. He paddled from upstream to one of the large islands on the brink. Natives knew Victoria Falls as Mosi-oa-tunya—the Smoke that Thunders. Iroquois Indians gave the world their word, Niagara, meaning Thunder of Waters.

Big Game Stamps out Fires in Kruger National Park

Kruger National Park, which includes nearly all the eastern fringe of the Transvaal, is larger than the State of Massachusetts. The zoological reserve was originally set aside in 1898 by Paul Kruger, the Boer president, and gradually increased to its present expanse.

Travelers in the park have noted many times that elephants, hippopotamuses, and rhinoceroses, far from having the traditional wild-animal fear of fire, actually have an instinct to put out the flames. The pachyderms have upset many a camping party by seeing the campfire and charging into it to stamp out the fire. The thick-skinned brutes are credited with saving millions of acres of African timberland by trampling out small fires before they get out of control.

Another surprising thing about these three-to-eight-ton "fire trucks"

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J. L. SMITH

TRAIN SMOKE MINGLES WITH THE "SMOKE THAT THUNDERS": A STEP FROM THE RAIL LINE VICTORIA FALLS LEAPS ITS 347-FOOT CLIFF

As in Colorado's Royal Gorge, trains stop so passengers may view a marvel of nature. This rail and automobile bridge spans the Boiling Pot, the gorge just below the falls where swirling Zambezi waters escape from the narrow, mist-filled cleft into which the cataract pours. The falls extend far beyond the picture in both directions. During South Africa's wet season much more water goes over the brink (page 3).

Fiery Craters of Hekla and Etna Fume Again

THE widely separated peoples of Iceland and Sicily live under the common threat of volcanic eruption. Recent outbreaks by Hekla and Etna have reminded the islanders of their ancient bondage to the old fire monsters.

Mt. Hekla, the best known of Iceland's many volcanoes, had lain dormant for more than a century before its current eruption. But, all told, in the past 900 years more than a score of devastating outbreaks have been recorded. Hekla has showered ash to a distance of 180 miles and poured down such quantities of molten lava as to pile the melted stone 40 to 70 feet high in a rampart encircling the base.

Hekla's Climbers Do Not Worry about Nightfall

For miles around, Hekla's previous eruptions have scattered pumice and red and black cinders and made the soil useless for agriculture. The volcano is situated in the populous southwest quarter of the island, 70 miles southeast of Reykjavík, the capital of the North Atlantic island republic. Six-sevenths of Virginia-sized Iceland is unproductive. The area under cultivation is less than half of one per cent.

Many travelers have climbed (illustration, page 6) to the mountain's crater, 4,754 feet above sea level. It is normally filled with snow and spotted with black vents extending down to Iceland's subterranean fires. Due to the northerly latitude, summer climbers can undertake the ascent without fear of being caught by darkness. Distant peaks are clearly visible even at midnight, though the sun is never wholly above the horizon at that hour.

From some of Iceland's volcanic mountains flow small streams of scalding hot water; and hundreds of hot springs and geysers give constant evidence of the "furnace" beneath the island. Homes and buildings are sometimes piped with hot water and steam from this volcanic furnace. The national hospital, outdoor swimming pool, and public laundries in Reykjavík are supplied by hot springs.

Iceland is one of the most volcanic regions on earth, its more than 100 volcanoes having literally thousands of craters, even in the plains and valleys. One lava field covers 1,700 square miles. Being of volcanic origin, the whole island was originally lava, which in a few places has become fertile soil.

Mt. Etna Is Europe's Largest Volcano

Sicily's Mt. Etna has released a fairly heavy lava flow on an average of every five or six years. It last indulged in large-scale violence in 1928.

Known to the ancients as Vulcan's mighty forge, Europe's highest volcano dominates the historic island at the toe of the Italian boot. Towering 10,800 feet, it spreads over an area one-fourth as large as Delaware. On its broad flanks it could accommodate Vesuvius and other well known active volcanoes.

Etna is capped by a distinct terminal cone with a crater several hundred feet deep and a mile in circumference. From many holes in the

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is the speed at which they can travel. The ponderous elephant can do 25 miles an hour for a short distance. The 6,000-pound rhinoceros can attain a race-horse speed of 35 miles an hour.

The hippopotamus, four tons and over, has a hide almost two inches thick, which alone may weigh more than a quarter of a ton. It can walk for miles on the bottom of a stream, closing ears and nostrils, coming up for air every six or seven minutes. By feeding on plants growing in river beds, it helps keep channels clear.

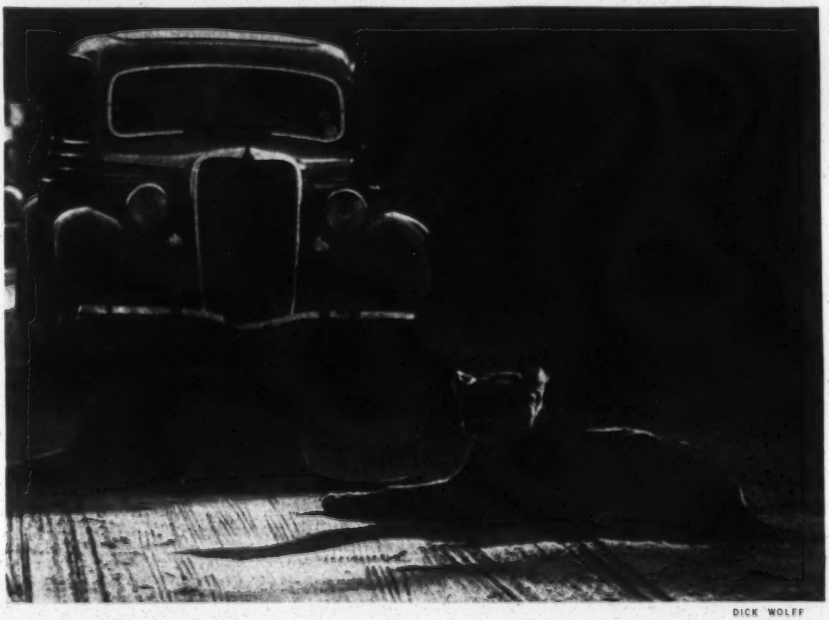
The elephant is Africa's highway engineer, with a knack for avoiding severe gradients. Many African roads, and even some railways, follow its age-old tracks, just as American routes follow buffalo trails.

Kruger park has about 1,200 miles of roadway. Rest camps are modeled after native villages. One of the camps accommodates 600 guests; another, 800. All travel is by automobile (illustration, below).

No accurate animal census in Kruger Park is possible. The population has been broadly estimated to include 2,000 giraffes, 2,000 buffaloes, 500 adult lions, over 400 hippopotamuses, 250 elephants, and a half-million antelopes of 18 varieties—in addition to warthogs, leopards, hyenas, baboons, and other species.

NOTE: Victoria Falls and the eastern area of the Transvaal, region of Kruger National Park, may be located on the National Geographic Society's map of Africa. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

See also, "Rhodesia, Hobby and Hope of Cecil Rhodes," in the *National Geographic Magazine* for September, 1944; "Rhodesia, the Pioneer Colony," June, 1935; and "Under the South African Union," April, 1931.



DICK WOLFF

LIONS "HOG THE ROAD" IN THIS "REVERSE ZOO" WHERE ANIMALS ROAM AND PEOPLE ARE "CAGED"

In South Africa's Kruger National Park, visitors must stay in their cars where exhaust fumes kill their betraying man-odor. Speed is 10 miles an hour. A rest camp must be reached by dark.

NATIONAL PARK SERIES: No. 26

Mt. Rainier, Flower-Garlanded Giant

ONE of the most majestic single mountains in the United States, Mt. Rainier (ray-NEAR) towers nearly 11,000 feet above its base. Three peaks in the country are higher, but none more impressive. The lone grandeur of this glacier-covered giant in west-central Washington can be admired from 100-150 miles in every direction. Residents of Tacoma, Seattle, and Yakima know it as a constant companion.

The mammoth mountain takes up one-fourth of the 378 square miles of Mt. Rainier National Park. It juts 14,408 feet above sea level, just 88 feet less than California's Mt. Whitney, high point in the 48 states. Rainier's other two superiors are Colorado's Elbert and Massive.

Wild Flowers Make a Wreath Around Rainier

Approaching from Puget Sound cities, visitors have the mountain in sight nearly all the way. Its blunted white top rises above the forests "like a world by itself." Snow and ice cover half the mountain even in summer. As the park is entered the peak looms higher and higher. At last Paradise Valley, near the foot of Nisqually Glacier, is reached.

One of the things that make Rainier known as a world beauty spot is its summer wreath of wild flowers. A 1,000-foot area overlapping on both sides of the 5,000-foot line around the mountain is a practically continuous belt of wild-flower gardens, or parks, in which flowers of all colors are crowded, petal to petal and knee high. The flowers grow from the ragged edge of the forest to the very feet of the glaciers. Some species even push through the snow.

Many trails from Paradise Valley, as well as from other centers in the park, lead to the natural gardens, which have such appealing names as Indian Henrys Hunting Ground, Summerland, Spray Park, Sunset Park, Klapatche Park, and Moraine Park. The Wonderland Trail completely encircles the mountain, mostly in this flower belt. All told, there are 240 miles of trails in the park.

Glaciers Have Red Snow, Worms, and Fleas

Rainier has the largest glacial system on a single peak in the United States. Five huge glaciers start at the very peak and extend octopuslike through valleys down the mountain side. At least 20 other icefields cling to the mountain. Some of them are "live," that is, they move; others are dead. Nisqually Glacier is best known because of its accessibility. Paradoxically, it moves in two directions at once. It advances an average of 16 inches a day during the summer but melts back at the rate of about 70 feet every season.

The "red snow" sometimes seen in the glaciers is a microscopic plant, several million strong, that colors the ice. The glaciers also have worms and fleas. Millions of brown, inch-long worms can be seen crawling on the ice of the lower glaciers. Springtails, tiny flealike insects, hop up and down on the ice and even crawl into it.

The "snout" or bottom of a live glacier often disappoints visitors because it is nearly black. This is the working end of the river of ice; it

crater, sulphurous vapors rise continuously, and balls of lava are shot skyward in times of activity.

The danger to the densely populated area on Etna's slopes, however, lies in great fractures through the mountain on north-to-south and east-to-west lines. Eruptions occur as far down as the 2,000-foot level, and numerous scars in areas of fertile vegetation mark regions of past lava flows.

Catania, coastal city of a quarter-million people living at the foot of Etna's slope 18 miles southeast of the summit cone, has been destroyed many times within recorded history by earthquakes and eruptions. The mountain's recent fissure appeared four miles north of the summit and sent lava threateningly down toward several villages on a main road nine miles from the cone.

The 1928 eruption, beginning in February high on the northeast slope, held its force until November, when Etna split open from the 8,300- to the 6,500-foot level. Within two weeks the lava flow had destroyed the town of Mascali, eastward close to the sea, and had cut the Messina-Catania railroad.

Skiers speed down Etna's slopes along snow trails above the 6,000-foot level, limit of highway climb. Men cover spring snow with volcanic ash; in summer they dig it out to sell as ice. Crops grow in the lava soil of lower slopes in eight times the volume per acre of Sicily's clay and marl areas.

NOTE; Mt. Etna and Mt. Hekla may be located on the Society's map of Europe and the Near East.

For additional information, see "American Soldier in Reykjavík," in the *National Geographic Magazine* for November, 1945*; and "Sicily Again in the Path of War," September, 1943; and in the GEOGRAPHIC SCHOOL BULLETINS, November 4, 1946, "Iceland Grants Air Base to United States." *(Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.)*

ISOBEL WYLIE HUTCHISON

ON THE LAVA-STREWN SLOPES OF MT. HEKLA, A PARTY OF CLIMBERS RESTS ITS PONIES

Platypus, Australian Oddity, Flies to U. S.

"WANTED—boys to supply live angleworms, hellgrammites, crayfish, tadpoles, snails, and beetle grubs in large quantities for the 'platypussary' at the zoo."

Such a plea may appear shortly in newspapers in United States cities. It depends on how three furry, playful "girl" platypuses named Betty, Cecil, and Penelope, now being flown from their native land—Australia—take to the aquatic home that is planned for them at the New York zoo.

Can Eat Its Weight in Worms

The three duckbills, which are migrating by special permission of the Australian government, are among the few of the shy, high-strung creatures that have become adjusted to captivity. There was a time when the soft, thick fur of the platypus was made into rugs. When it appeared that there was danger of the animal becoming extinct, rigid laws were passed to protect it in its native mountain streams of eastern Australia and Tasmania. No one can own a platypus without official permission.

Three average adult duckbilled platypuses would total only six pounds in weight, but normally would require nearly three pounds of assorted worms and grubs for their nightly diet. A mother platypus, nursing her two or three youngsters, eats virtually her own weight in such assorted viands as the lowly grub, the tadpole, or—if she can get it—the more elegant shrimp, every 24 hours.

When lying flat in the water, the platypus looks very much like a fur-coated hot-water bottle. It seldom is longer than 20 inches, including its flexible bill and broad, flat tail.

The platypus is a fantastic package of paradoxes. It would almost seem that it could be the answer to any question in a game of "Bird, Beast, or Fish?" The bill, the beady eyes, webbed feet, and absence of external ears (illustration, page 10), make it seem like a duck. It lays sparrow-size eggs, and has a strange growling cluck somewhat like that of a broody hen. It can also hiss like a gander.

The Platypus Is a Relic of Prehistoric Times

Spurs directed inward from the ankles of the male's hind feet also suggest a fowl. These spurs are hollow and can inject poison into the hide of an enemy, which gives the duckbill a snakelike characteristic. It is the only venomous furred creature in the world.

Its choice of food could be the favorite menu of a fish. The platypus can stay under water for five minutes and then can catch its breath through the tip of its bill without being seen. Actually, however, the platypus is classed as a true mammal of primitive form, of a pattern dating back to the days of the dinosaur.

The velvety, gray-brown fur, the four feet with five digging claws each (in addition to the webs), and the tail are outward signs of the mammal. After the platypus eggs hatch into blind, naked infants, the female nurses her brood until nearly full grown.

But this is only a beginning in describing the platypus. Comments on its super-strange appearance range from remarks of early scientists that

becomes impregnated with boulders, chewed-up rocks, dirt, and gravel. The stream that flows from under the snout is milky with residue. The entire upper part of a live glacier is clean and sparkling.

Even the snout of a dead glacier is clean (for example, Paradise Glacier, next door to Nisqually). It is the site of most of the "tin-pants" sliding done in Rainier. Visitors don specially prepared hard-seated breeches and form a human chain. The last one in the line gives a push, and off the trouser-tobogganists slide toward the glacier bottom.

A bigger thrill for mountain climbers is the ascent to the summit. This is no afternoon stroll; park officials ask everyone attempting the climb to register. Also they assure themselves that each climber is physically capable of the effort. From Paradise Valley, most parties start in the afternoon. They reach Camp Muir at 10,000 feet for a short night's rest. At 2 A.M. they begin the last gruelling three miles, returning to Paradise Valley the same day.

The mountain was first climbed in 1870, the year of its last volcanic activity. Indians probably never had climbed it. They linked its snowy vastness with their ideas of God, even calling it "the mountain that was God." In 1792, Captain George Vancouver of the British Navy sighted the peak and named it for his friend, Admiral Peter Rainier.

The southwest entrance road, leading to Longmire, Paradise Valley, and the park's skiing grounds (illustration, below), is open all year. Roads leading to Ohanapecosh and Yakima Park, accommodation centers on the east side of the park, are open only in summer.

NOTE: Mt. Rainier National Park appears on the Society's Map of Northwestern United States. See also, "Western National Parks Invite America Out of Doors," in the *National Geographic Magazine* for July, 1934; and "Washington, the Evergreen State," February, 1933.

IN WINTER MT. RAINIER'S PARADISE VALLEY IS A PARADISE FOR SKIERS

Sometimes snow 50 feet deep covers the summer cabins. Mt. Rainier soars 9,000 feet above.

Many Looms Idle in Tweed-Weaving Hebrides

POSTWAR shortages have brought depression to the remote Outer Hebrides off Scotland's west coast. Production of Harris tweed—the islands' chief "crop"—has been drastically cut for lack of bichromate of soda, used in processing yarn. Britain's coal shortage is to blame.

On Lewis Island, largest of the group, nearly half the workers are idle. Normally about 5,000 men and women on the bleak little islands earn a living from production of the fabric which has made the names of "the islands of Lewis and Harris" known all over the world.

It's Still "Harris" Tweed, from Any Island

Actually, the two so-called "islands" are one. A rectagular peninsula dangling from the southern coast of Lewis is called the "island" of Harris. Actually, also, tweed is not tweed, but twill. It received its name more than a century ago when a clerk by mistake wrote "tweels," Scottish for "twills." A further error translated "tweels" to "tweeds" and the name has stuck so firmly that it is now the accepted term for the cloth.

Production of the fabric from sheep to shipping is the chief industry of all the Outer Hebrides—19 inhabited islands, five with only one family each. The output—all called Harris tweed (illustration, cover) regardless of the island on which it is woven—is named for Lewis's pendant peninsula.

The name Harris is thought to be a corruption of an old Norse word meaning high. The south end of Harris rises to a height of 1,500 feet, with a higher peak nearer the isthmus connecting it to Lewis. Three miles north rises 2,622-foot Mt. Clisham, highest peak in the Hebrides.

The crofters of the Hebrides are hardy and independent. So called from the crofts (small parcels of rented land) they till, they force a living from the rocky islands and the sea. The dependent town dwellers, on the contrary, even import bread from the mainland.

A Single Roof Shelters Family and Farm Animals

To quote the label on a Harris tweed coat, the material is "woven by the crofters in their cottages on the islands of Lewis and Harris." These cottages are of locally quarried limestone. Roof rafters are covered with turf, then thatched. Smoke from the peat fire in the living-room kitchen permeates the tweed, giving it a characteristic odor.

Cottages are often in three sections: one end with an outer door is reserved for livestock, with a half-door leading to the central section where the family lives. At the far end are sleeping quarters. Dirt floors are favored over cement as absorbent, and warmer. Thick stone walls keep the house warm when winter winds sweep across from the Atlantic. The roof is held down by wire or rope net (illustration, page 12).

Potatoes and oats (the islanders' staff of life) are the chief crops. Sea birds are salted and kept in stone storehouses; the cliffs yield quantities of sea-bird eggs. Crofters butcher their own sheep and have plenty of fish. Men work with the fishing fleet and women clean the catch.

Plows made at the local smithy turn the farmland on steep hillsides. Rakes or hand-dragged harrows break the soil. There is no farm ma-

"There's no such animal," to those of American soldiers who saw it in Australia and refused to believe their eyes. They called it a "duck with a fur coat," and let it go at that.

Of five platypuses sent to the New York zoo 25 years ago, only one lived. In spite of the greatest care—special housing facilities, and all the shrimps it would eat—the sole survivor of the troupe died only about six weeks after his arrival in New York.

NOTE: For additional information on the platypus, see "What the Fighting Yanks See," in the *National Geographic Magazine* for October, 1944; and "Australia's Patchwork Creature, the Platypus," August, 1939*.

MORWELL HODGES

LITTLE BIRD-BEAST-OR-FISH FORAGES THROUGH THE FERN LEAVES FOR FOOD

Warily inching its way along the ground, the timid platypus goes hunting for its dinner. Having no teeth, Duckbill lives on such boneless edibles as grubs, worms, and tadpoles. The platypus is a singularly synthetic appearing animal. Its bill looks like a small change purse into which it has poked an inquisitive nose. The claw-ed paws projecting from its smoothly furred sides seem to have been borrowed from a bird. Its fishlike habits keep it in the water much of the time.

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chinery. Seaweed, and even the sooted roof thatch are used as fertilizer.

The women spin their own wool and dye the yarn with lichen, heather tops, roots, peat, and soot. They not only weave tweed and an occasional blanket, but knit underwear, stockings, and jerseys.

Harris's highland farms comprise patches measured not in acres, but in square yards. Except for this south third, Lewis's 1,000-square-mile area is mainly moor, rich in peat, with crofts of three to five acres.

Stornoway, chief town of Lewis, on the east coast, is a world apart, with a tenth of the island's 35,000 people. The late Lord Leverhulme, who owned the island, improved the harbor, built roads, a fish-canning factory, and a refrigeration plant to preserve fresh fish.

He provided the town with electricity and a steam laundry, and enlarged the gas works. He gave Castle Woods for a public park, and the castle overlooking the harbor for use as a town hall.

Gaelic is spoken—and sung—in the islands, though English is taught in the schools. Bagpipes and Highland dances are popular, but islanders look upon Scots as "foreigners," thought most of their manufactured goods and profitable summer tourists come from the mainland.

NOTE: The Hebrides are shown on the Society's Map of the British Isles. See also, "Hunting Folk Songs in the Hebrides," in the *Magazine*, February, 1947.

MARGARET SHAW CAMPBELL

LEGS TIED TO KEEP HER FROM KICKING, THIS COW WITH A WIND-BLOWN "BOB" HAS A COAT AS SHAGGY AS THE ROOF OF THE COTTAGE—A TYPICAL HOME IN THE WIND-BLOWN HEBRIDES